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Application for
The City of Rio Dell
Proposition 13
Urban Water Conservation Program

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Application for (Specify from (k)	
Principle Applic	Rio Dell, City of	Does Proposal in	<input type="checkbox"/>
Project Title	Water Use Efficiency 2002		
First Name-Aut	Jime		
Last Name (AA)	Stretch		
Title	Intrim City Manager		
Street Address	675 wildwood Avenue		
PO Box			
City	Rio Dell		
State	CA		
Zip Code	95562		
Telephone Num	(707) 764-65		
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Funds Requeste	\$714,910.00		
Applicant Funds			
Total Project Co	\$714,910.00		
Estimated Total	\$932,028.00		
Percentage of Be	100%		
Percentage of Be			
Estimated Annu	56		
Estimated Total	1120		

Over ____ Nu

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Estimated Benef

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Duration of Proj

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Project Focus	b) Urban
Project Type	a) Implementation of Ur
Quantifiable Ob	0

PROPOSAL - PART TWO

PROJECT SUMMARY

This document presents a project proposal for the City of Rio Dell to replace malfunctioning and non-functioning water meters within the City water system.

The City of Rio Dell is located in Humboldt County approximately 25 miles south of Eureka. The City has 1180 water service meters. Customers are billed based on the amount of water they use above a base volume of 600 cubic feet. The metering of water service is highly inaccurate, for a majority of the meters, however. The existing water meters were evaluated by the public works director and the City Engineer to determine which meters were non functional and under-reporting and needed to be replaced. Due to the age of the system, the lack of funds available for maintenance and water meter replacement, and the historical poor quality of water in the City, all except the most recently replaced meters need replacement.

Many of the meters are more than 20 years old and even with good quality water, meters of this age typically under-report actual usage. With the extremely high levels of iron and manganese in the City's previous well water supply, the failure rate of Rio Dell water meters is even higher due to clogging of mechanical parts. Therefore, the City needs to replace approximately 1,000 water meters in the system.

The objective of this project is to improve the water use efficiency of the City of Rio Dell water system. This will be accomplished with the proposed project through the replacement of 1,000 aging water meters within the water service area. The proposed project would allow the City to immediately improve its water metering accuracy, which would provide incentives for customers to conserve water, improve the management of the Rio Dell water system, and increase water system revenues.

The proposed project consists of seven tasks, which are as follows:

- Task one will be a field review of water meters.
- Task two will be the completion of design plans and specifications.
- Task three will put the project out for bid.
- Task four will be the construction phase.
- Task five will closeout the construction project.
- Task six will be administration of the grant, and
- Task seven will be quarterly reporting to the Department of Water Resources.

Estimates of water savings due to meter replacement vary depending on the service area characteristics, metered rate schedules, and overall water conservation programs and activities. The total water savings was conservatively estimated at 20.1 million gallons per year or 56 acre-ft per year.

The total project costs amount to \$ 714,910. The project benefits amount to \$ 936,138. These figures result in a cost benefit ratio of 1.31. This B/C ratio shows that the project is locally cost effective, which is a requirement of the Prop 13 Urban Grant program.

A. SCOPE OF WORK: RELEVANCE & IMPORTANCE

1. Nature, Scope, and Objectives of the Project

The objective of this project is to improve the water use efficiency of the City of Rio Dell water system and improve water system revenues. This will be accomplished with the proposed project through the replacement of 1,000 aging water meters within the water service area. The proposed project would allow the City to immediately improve its water metering accuracy, which would provide incentives for customers to conserve water, improve the management of the Rio Dell water system, and increase water system revenues.

2. Statement of Critical, Local, Regional, Bay-Delta, State or Federal Water Issues

The City of Rio Dell (the City) is located on the northern California coast in Humboldt County approximately 25 miles south of Eureka. A vicinity map is presented as Figure 1 and a diagram showing the service area boundary is presented as Figure 2. The City of Rio Dell is a residential community and has small commercial and industrial districts. Many of the residents work in timber related industries, and over fifty percent of the households in the City are low income.

Need for the Project

The City of Rio Dell currently has approximately 1180 water service connections, most of which are over 20 years old. Customers are billed based on the amount of water they use above a base volume of 600 cubic feet. Until recently the City's water source was from several groundwater wells that produced water with very high iron and manganese concentrations. With the extremely high levels of iron and manganese in the City's historical well water supply, the failure rate of Rio Dell water meters is very high due to clogging of mechanical parts. The City of Rio Dell public works department has evaluated the water meters and determined that approximately 75% of the water meters in the City are underreporting water usage and that another 11% have completely stopped functioning.

The City's water system has been operating under a deficit for the last several years, and the City has not had the resources to replace large numbers of water meters or perform significant maintenance. Poor water quality has clogged some meters to the point where customers have noticed a decrease in their water pressure and have notified the City, which has has to clean or replace meters.

Due to the age of the system, the lack of funds available for maintenance and water meter replacement, and the historical poor quality of water in the City all except the most recently replaced meters need replacement.

The City recently began using surface water from the Eel River with greatly improved water quality. Therefore, the meters replaced under this project are expected to function accurately over the long term.

Consistency with Management Plans

The Humboldt County General Plan supports giving serious consideration to water conservation techniques, such as water pricing. Water conservation will be encouraged through this project by increasing monthly water bills to appropriately charge for the actual amount of water used. The Department of Water Resources Bulletin 160-98, "The California Water Plan," supports increasing water conservation in California coastal regions. The Urban Water Conservation Options presented in the California Water Plan include conservation measures to reduce overall water demand. The proposed project will support both state and regional water management plans.

The City of Rio Dell's surface water source, the Eel River, is a major waterway in the state of California. It serves as a source of water for many communities along its course, the nearest to Rio Dell being the Town of Scotia. The Eel River also serves nearby communities of Fort Seward and Redway. The lower Eel River is a designated component of the California Wild and Scenic Rivers System under the California Wild and Scenic Rivers Act, and it is classified as recreational. The lower Eel River is also a component of the National Wild and Scenic Rivers System. Encouraging water conservation through accurate metering will reduce the demands on this local resource.

B. SCOPE OF WORK: TECHNICAL/ SCIENTIFIC MERIT, FEASIBILITY, MONITORING AND ASSESSMENT

1. Methods, Procedures, and Facilities

The City of Rio Dell clearly has the need to improve the metering of its water use. The overall goal is to enhance the management of the Rio Dell water system, which improves the City's ability to analyze water use, correctly charge customers for appropriate water use, encourage water conservation, and better define water system losses. This project proposes to replace 1,000 malfunctioning water meters within the service area.

Accurately understanding system water use is a high priority for the City of Rio Dell. The City of Rio Dell is prepared to begin the water meter replacement project as soon as the contract for the grant is approved and anticipates project completion within one year, after the contract is approved.

2. Task List and Schedule

This section will focus on the detailed tasks for completing the City of Rio Dell Water Meter Replacement Project. The scope of services has been developed to meet the needs of the City of Rio Dell and the requirements of the grant. A timetable is included in Table 1 that shows the start and stop dates of each of the project tasks, the final deliverables for each task are due at the stop date. None of the tasks are considered to be separable from the project. Section D, Benefits and Costs, contains detailed cost projections including a summary of the proposed project costs with a quarterly breakdown and a detailed breakdown of costs by personnel and task.

Task 1: Field Inspection

Rio Dell public works personnel and other inspectors will walk the service area to develop the most practical plan for the replacement of each of the underreporting or completely failed water meters. Each location is unique. Some will only require meter replacement, others will require new fittings and a new box as well, and still others will require more extensive repairs. The final deliverable for this task will be the identification of the locations of meters to be replaced and the requirements for each replacement.

Task 2: Develop And Review Plans And Specifications

Based on the data collected in the above task, a set of project plans will be developed for contractor bidding. The City of Rio Dell will be given an opportunity to review the plans throughout the development process. This submittal will include the location of water meters to be replaced and specifications for meter replacement. The cost estimate developed in the original proposal will be refined to incorporate the latest information during design. The final deliverable for this task will be a complete set of design plans and specifications that is ready for distribution during the bidding period.

Task 3: Bid Period Services

Once final plans and specifications are complete and approved, the project enters the bid phase. During the bid phase plans and specifications will be reproduced and distributed, pre-bid meetings and job site walks will be conducted, contractor questions during bidding, will be addressed, bid results will be evaluated, and contractor bonds and insurance will be reviewed prior to executing the construction contract. The final deliverable for this task will be the completion of all items listed above and contractor bids for the work.

Task 4: Construction Inspection And Management

One of the most critical steps in achieving the ultimate goal of the project is construction inspection and management. Qualified inspectors and construction managers will be used to ensure that the construction project runs smoothly, the client is properly represented in the field and that the work is constructed as intended. The engineering construction inspector will keep daily records of construction activities, inspection, and progress, including all significant oral and written communications with the contractor. The contractor will be notified of work not acceptable that must be corrected. A full time engineering construction inspector will be on site for the duration of the project. The engineering construction inspector will be supported by office staff for submittal review, project management, and document filing.

The construction period is estimated to be sixteen weeks in length. This is based on the contractor replacing 250 meters in a month, which is an average of 12.5 meters a day. To accomplish this, the contractor will need to operate between two and four crews a day. One full time field inspector plus support from office will be sufficient to cover the project because the inspector will be able to rotate between contractor crews to inspect each installation before and after the work is done.

During construction, weekly meetings will be held with the City, the contractor, and the inspector. The project schedule, materials supply list, contractor payment requests, contractor log submittals, and payroll and manpower utilization reports will be reviewed and updated as necessary. Also included are surveys, and materials testing, administrative functions, tracking and monitoring the review process, preparing any recommended change orders, and maintaining accounts of commitments, expenditures, and forecasts of cash flows and costs to complete.

Task 5: Construction Project Closeout

Once the project is complete, it enters the closeout phase. During the close out phase, the inspector would establish that all work is substantially complete and prepare a list of any unfinished work. Copies of accumulated records and reports would be turned over to the City. A notice of completion would be prepared and recorded with the County Clerk, and recommendations concerning final payments to contractors and the release of retained percentages would be prepared.

Task 6: *Quarterly DWR Reporting*

Quarterly progress reports shall be generated as requested by DWR. The quarterly report shall include a summary of the proposed project budget and schedule performance to date. The quarterly progress reports will be submitted after every three months throughout the duration of the project. The deliverable for this task are due quarterly to the Department of Water Resources.

Task 7: *Grant Administration*

The City of Rio Dell as the applicant is the overall administrator of the Grant. The City will oversee the completion of the work and shall review and submit monthly reimbursement requests. The final deliverable for this task will be the completion of all project tasks.

3. Monitoring and Assessment

The success of this project will demonstrated through accurate metering of water and collection of appropriate revenue. It's success will also be demonstrated through a reduction of public works staff time associated with repairing malfunctioning meters.

Improved information on raw water use and billed metered use can now be accurately collected by the City. Data on metered water use will be presented in the Rio Dell Public Water System Report which is submitted to the Department of Water Resources annually, and is available to the public as well.

Monitoring and assessment will be conducted throughout the construction process. A Project Quality Plan will be developed by the project manager at the start of the project. The initial step will be to identify project milestones. They will be identified by reviewing the scope of work and considering significant stages of the design and construction processes. The Project Quality Plan will identify the quality reviews to be performed at each milestone. The review procedures for to be used at any given milestone are determined by the project manager and based on the specific needs of the project. They include discipline review, graphic standards review, project manager review, client comment review, coordination review, interdisciplinary review, and quality assurance review.

During project construction, a thorough construction and inspection plan will be followed. Successful construction management begins and ends with thorough, accurate, and complete documentation. Documentation takes the form of photographs, videotapes, daily inspection reports, a daily diary, submittals and responses, Requests for Information (RFI), Requests for Cost Proposals (RFCP), field trouble reports, change orders, progress pay applications, and other forms of documentation that cover all major aspects of the project. Each of the forms of correspondence between the contractor, the construction inspector and manager, and the owner are tracked with control logs so that it is known when each construction related document passes through each parties hands. Using this approach, the details of the construction project can be tracked.

4. Preliminary Plans and Specifications

The City of Rio Dell has recognized the need for the replacement of water meters for many years, but it has been an issue of obtaining adequate funding to make the necessary improvements. Attached to this document is a list the City has developed for broken water meters (see Appendix A).

The City has previous water system master plans that were initially used to identify the locations and types of meter repairs that are required. Field reconnaissance was conducted with the City of Rio Dell public works staff to provide further information on the amount of work required to replace various configurations of water meters. The replacement of water meters for Rio Dell will include a broad range of conditions. For the purposes of analysis, we have divided the conditions into Low Difficulty, Medium Difficulty, and High Difficulty.

A low difficulty replacement is a case where only the old meter needs to be removed and a new meter installed in its place. All fittings and valves entering the meter are in acceptable condition as is the meter box and the service line from the main to the meter. This type of replacement is estimated to cost \$200 and there are approximately 250 low difficulty replacements.

Some situations require additional work such as replacement of valves and fittings that attach to the meter and the meter box itself may need to be replaced. This would be a medium difficulty installation which is estimated to cost \$500 and there are estimated to be approximately 500 such installations.

High difficulty replacements will require more extensive work such as relocation of the meter box and replacement of sections of the service line in addition to replacement of valves, fittings and the meter itself. There are approximately 250 high difficulty replacements that are estimated to cost approximately \$900 each.

The water meters, valves, fittings, and other features will be constructed per the City of Rio Dell standard details, State of California Standard Plans and Specifications, and as per industry standards for water systems.

C. QUALIFICATIONS OF THE APPLICANTS AND COOPERATORS

The Project Manager is Steven X. McHaney. A copy of his resume is attached on the following pages.

Steven X. McHaney

Project Manager

Experience

Proposed Responsibility
 Project Manager
 Civil Environmental
 Engineer

Education
 B.S., Environmental
 Resource Engineering,
 1986

Professional Registration
 Professional Engineer -
 California
 Oregon
 Idaho
 Hawaii

California Grade 3 Water
 Treatment Plant
 Operator

- Mr. McHaney continues to serve as the District Engineer for the Palmer Creek Community Services District in Humboldt County. Mr. McHaney developed a conceptual plan for the water system, finalized low interest loan and grant funding through Rural Development from the federal government, and completed the assessment district process. His work included locating potential well and reservoir sites, negotiating with property owners, and permitting through the Department of Health Services and the County. Mr. McHaney managed the design of tanks, pump stations, transmission pipelines, wells, and control systems.
- Mr. McHaney serves as the City Engineer for the City of Trinidad, California. One of the main parts of the City infrastructure is the water treatment plant that takes raw water from Luffenholz Creek. This water supply is of very poor quality in the winter months and Mr. McHaney works with the water treatment plant operator and the City water commissioner to keep the plant operating throughout the year. Mr. McHaney is on call and responds during periods when water treatment plant operational assistance is needed and during emergency conditions.
- Mr. McHaney also serves as the City Engineer for the City of Rio Dell, California. The water system is of the main components of the City infrastructure. Mr. McHaney recently completed the design and construction administration of the 0.5 mgd Emergency Interim Water Supply System including water intake and treatment systems. Mr. McHaney is also completing a water supply feasibility study for the City of Rio Dell that outlines the long term water management strategy for the City.
- For the City of Pittsburg, Mr. McHaney was the project engineer responsible for the development of a water system master plan for meeting the domestic, commercial and industrial water needs of the city over a 20 year planning horizon. No hydraulic modeling of the system had ever been completed previously and Mr. McHaney researched historical water consumption and projected future water needs. He developed a nearly 1,000 pipe hydraulic model using KYPIPE and calibrated it using field measurements. The model was used to size pipelines, reservoirs, and pump stations and to simulate fire flow conditions. Extended period simulations were used for modeling the diurnal effects of filling and drawing reservoirs under average and maximum day plus fire flow conditions.

Mr. McHaney developed a detailed five year capital improvements program and a conceptual long term program based on finding from modeling and field investigations. His recommendations included improvements to the existing system to provide more reliable fire flows to commercial developments by providing a looped distribution system. Recommendations also included improvements to several areas of existing flow and pressure deficiencies as well as future facilities needed to serve master planned growth. Mr. McHaney also developed a modified water pricing schedule based on the actual cost to convey water to individual pressure zones.



Steven X. McHaney
Project Manager**Experience**

- For the Dublin San Ramon Services District, Mr. McHaney developed hydraulic models for potable water, recycled water, and wastewater for a 5,000 unit and a 6,000 new development in the District's service area. He used CYBERNET to develop separate potable and recycled water models for each development and HYDRA to develop the wastewater models for the developments. The model was operated under Maximum day plus fire flow conditions to size 250,000 feet of pipelines, 10 reservoirs, and five pump stations in the new developments.
- In another project for the Dublin San Ramon Services District, Mr. McHaney modified the District's existing CYBERNET model to evaluate the six options for siting a new pressure zone 1 reservoir for serving Eastern Dublin. The CYBERNET model was also used for evaluating the effect of moving the District's main potable water turnout. An extended period simulation was developed to evaluate the effect on the reservoir storage capacity and the transmission main pressure under maximum day plus fire flow conditions. The results of the modeling were used for the development of long term reservoir siting plans and near term interim options that maximized the use of existing facilities and delayed the construction of new facilities.
- Mr. McHaney served as the discipline Engineer for development of the City of San Jose's Phase II Reclamation Facility Plan which was the initial planning for the South Bay Water Recycling Project. Mr. McHaney conducted a recycled water market assessment over a study area in excess of 150 square miles. In excess of 5,000 potential landscape and agricultural irrigation customers were identified by Mr. McHaney through consideration of water purveyor records, evaluation of aerial photographs and research of individual potential customers. Mail surveys and site investigations were conducted to screen the potential customers to over 550 selected customers with an average recycled water demand of 26 mgd. Monthly and daily demand variations were assessed along with storage and distribution requirements as well as irrigation management considerations.

An additional phase of work involved the development of a master planned distribution network to serve the over 550 potential recycled water customers. Mr. McHaney evaluated the pressure zones, pump stations, and distribution mains needs of the system and assisted in the development and calibration of a CYBERNET computer model. The resulting system model was developed to serve these customers through five pressure zones, with 14 reservoirs, 21 pump stations and over one million feet of pipe up to 42 inches in diameter to serve a peak hour demand of over 200 million gallons per day. The results of the modeling were used to develop a several hundred million dollar capital improvements program.

The initial market assessment and the CYBERNET model were integrated into a complete information management system to be used as a database for tracking individual customer's water use, for billing, for long trend analysis, and to provide a graphical interface for operators. The CYBERNET model and the information management system serve as the centerpiece of the long term planning for South Bay Water Recycling.

- As Project Engineer for the Sonoma Valley County Sanitation District, Mr. McHaney was responsible for the development of a comprehensive



Steven X. McHaney
Project Manager**Experience**

recycled water system project management plan and worker training program. He was responsible for interfacing between vineyard and pasture users of reclaimed water and regulatory agencies. Mr. McHaney negotiated permits with the RWQCB to meet user needs as well as the needs of the district.

He researched the water quality and quantity needs for each user. An additional important responsibility was the development of a worker training program that met the health related requirements as well as the agricultural application of reclaimed water. Mr. McHaney produced a professionally developed training videotape that also served as a public relations tool. Mr. McHaney conducted training sessions for management and oversaw training of workers.

- Mr McHaney was the Project Engineer for the development of three Plans of services for the Dublin San Ramon Services District. These Plans of Services were developed to meet the developer projected needs of the Tassajara Valley Property Owners Association (TVPOA), the Windemere Ranch Partners portion of the Dougherty Valley, and the Schaefer Ranch development. Each of these Plans of Service included developing potable water, recycled water, and wastewater needs for each development and then developing the required infrastructure meeting District criteria to meet these needs.

The approach to each of these projects was based on meeting the short term needs of the developers during construction and phasing infrastructure to meet the buildout schedule of the developer while minimizing the unused capacity of installed infrastructure. Separate CYBERNET potable water and recycled water models were developed along with HYDRA models for the wastewater system.

Through an additional study, Mr. McHaney preliminarily evaluated integrating service for the Windemere project with Eastern Dublin and other area developments. Through this integration of service, there is the potential for saving on overall storage volume and the ability to develop shared transmission mains and looped distribution systems to provide greater reliability.

- As Project Manager for the Dublin San Ramon Services District, Mr. McHaney developed a detailed evaluation of providing potable water service to pressure zone 4 on the West Side including the previously evaluated Schaefer Ranch. Under this study Mr. McHaney evaluated potential developments in the region and resulting water demands. He also evaluated the potential requirements of the Wildfire Management Plan and how it could affect the fire storage and vegetation management requirements. Mr. McHaney considered six reservoir sites and developed an overall zone 4 distribution concept. He also developed several implementation scenarios that could accommodate various orders of development in the regions of the West Side.
- For Discovery Bay in Brentwood, California, Mr. McHaney served as the Project Engineer for the development of a potable water acquisition and treatment concept for a potential waterfront housing development. This work included locating water supply, developing a treatment system



Steven X. McHaney
Project Manager**Experience**

meeting Department of health Services Requirements and development of a transmission and storage system concept. Mr. McHaney developed conceptual plans and specifications and cost estimates including project phasing to meet developer anticipated construction schedule.



D. BENEFITS AND COSTS

1. Budget Breakdown and Justification

A budget breakdown summary is included in Table 2, attached at the end of this section. More detailed cost breakdowns are included in Tables 3 to 6, attached at the end of this section. The cost justifications for the various project component are included below.

- a. Land Purchase/ Easement: No land purchases or easements will be required for this project
- b. Planning/Design/Engineering: Included with this section are Tables 3 – 6 that show a detailed cost break down by tasks. Tasks 1, 2, 3, 6, and 7 were included as part of this category. The personnel and time required for each of these tasks is a reasonable estimate based on past experience with project of this type.
- c. Materials and Installation: The costs for purchasing and installing the new water meters represent the materials and installation costs. The cost per meter varies depending on the difficulty of installation and the components required. More details on the materials and installation cost can be found in Section B.4., preliminary plans and specifications.
- d. Structures: No structures beyond the water meters included in item c will be required for this project
- e. Equipment Purchases/ Rentals: No equipment purchases or rentals will be required by the City of Rio Dell to complete project.
- f. Environmental Mitigation/ Enhancement: This project replaces existing infrastructure. It is expected that the CEQA process will result in a categorical exemption. The project will not be subject to NEPA requirements.
- g. Construction/ Administration/ Overhead: Included with this section are Tables 3 – 6 that show a detailed cost break down by tasks. Tasks 4 and 5 were included as part of this category. The personnel and time required for each of these tasks is a reasonable estimate based on past experience with project of this type. Further justification for this cost can be found in the Task 4 construction inspection and management description in Section B.2.
- h. Project/ Legal/ License fees: A small figure of \$5,000 for project legal and license fees is included to cover any legal costs the construction project may encounter.
- i. Contingency: A 10% contingency is included in the project cost. This is a reasonable value based on the degree of possible underestimation of the cost of new meter installation.

2. Cost-Sharing

The proposed project does not include additional funding sources outside this grant application.

3. Benefit Summary and Breakdown

This proposed project will result in the replacement of 1,000 water meters within the service area. There are two quantifiable project benefits relating to increased water system revenue and

reduced water demand, which are discussed below. There are also non-quantifiable project benefits that are also described in this section.

The quantifiable project benefits consist of the additional revenue the City of Rio Dell will receive with accurate metering of water, and annual water saved due to conservation. The additional revenue to the City is estimated at \$932,028 for 20 years. Details of this estimate are presented in section D.4. The estimate is based on an average per connection water use of 381 gallons per day, which includes the water conservation that would occur with accurate metering of water use. Without the implementation of this project water use would increase above that value and the City would be losing even more revenue annually. The increase in water system revenue will benefit the applicant, the City of Rio Dell. It will also indirectly benefit the water system customers by reducing the water rate increases the City would need to implement to solve system deficit problems.

The amount of water to be saved by the project is estimated to be 56 acre-ft per year, and details of this estimate are also presented in section D.4. The beneficiaries of the conserved water are described below.

Water metering provides an incentive for customers to improve water conservation. When water customers are being under charged for their actual water use, they do not see a direct benefit from water conservation. When customers are charged appropriately there will be a better correlation between water use and water cost. Customers will directly benefit from conserving water when they reduce their monthly water bill. Water conservation also benefits Humboldt County and state water management plans.

Water conservation also benefits the City of Rio Dell's surface water source, the Eel River. The Eel River is a major waterway in the state of California. The lower Eel River is a designated component of the California Wild and Scenic Rivers System under the California Wild and Scenic Rivers Act, and it is classified as recreational. The lower Eel River is also a component of the National Wild and Scenic Rivers System. Encouraging water conservation through accurate metering will minimize the demands on this local resource, which will improve water quality in the River, and benefit local wildlife and fisheries.

There are a non-quantifiable benefit of this project to the City of Rio Dell in improved management of their water system. This is considered primarily an applicant benefit although water metering data is also used at the regional and state level. The ability to accurately meter water uses will give the City the ability to track its water use. In the past, data on City water use was very limited. This made it more difficult for the City to plan its water use, system upgrades, and rate structure.

This project is located outside of the CALFED water management boundaries and will not contribute directly to CALFED goals. However, as demonstrated above, this project does benefit regional and state water management as well as the City of Rio Dell.

4. Assessment of Costs and Benefits

A detailed estimate of benefits is presented in Table 7. Annual savings to the City water system were estimated using the assumptions presented in Table 7. The benefits were assumed to occur over 20 years, which is the typical life of a water meter. All costs were brought into the present using a 6% interest rate and future benefits were not adjusted for inflation.

Connections with broken water meters are only charged the base rate each month, which includes 600 C.F of water. It was assumed that if these connections were metered, they would be using the monthly average water use, including reductions due to conservation. Their benefit was calculated by multiplying the cost of water (\$1.72 per H.C.F) by the difference between the base rate water volume and the average water volume, which was approximately 60% of the average water use or 918 C.F. For the connections with malfunctioning water meters it was assumed that the meters were under reporting the actual water use by 20% of the average use, and the water volume was multiplied by the cost of water to estimate the benefit.

The amount of water to be conserved through meter replacement can be estimated. The total anticipated water use with meter replacement is estimated to be 150 gallons per capita day (gpcd). This is based on similar local systems with good quality water and accurate metering. The City's historical water use has been lower than this due to extremely high levels of iron and manganese in the well water that made it unfit for drinking, bathing, and washing, however, the City recently switched from the poor quality wells to high quality Eel River water. In a very short time, consumption has increased significantly and is growing beyond 150 gpcd. Accurate metering is needed to encourage people to now conserve the new source of high quality water.

Estimates of water savings due to meter replacement vary depending on the service area characteristics, metered rate schedules, and overall water conservation programs and activities. The water use within the Rio Dell service area is expected to decrease from potential levels due to meter replacement. Published estimates of the amount of water savings due to metering vary greatly. The most recent update to the "Memorandum of Understanding Regarding Urban Water Conservation in California" published by the California Urban Water Conservation Council estimated that water metering could decrease water use by 20%.

The potential conservation due to metering in Rio Dell is expected to be less than 20% because there are some functioning and partially functioning meters within the system. The water savings for the 134 non-functioning meters was estimated at 20%. The water conservation for the 885 malfunctioning meters was estimated at 10%, and there was no water savings attributed to functioning meters. The total water savings was conservatively estimated at 20.1 million gallons per year or 56 acre-ft per year. Details of the calculation can be found in Table 7, attached at the end of this section.

The total project costs are included in Table 2 and amount to \$714,910. The project benefits are included in Table 7 and amount to \$ 932,028. These figures result in a cost benefit ratio of 1.30. This B/C ratio shows that the project is locally cost effective, which is a requirement of the Prop 13 Urban Grant program.

E. OUTREACH COMMUNITY INVOLVEMENT AND ACCEPTANCE

The need for this project has been evident in the community for years. Attached to this document, are copies of complaints from water customers received by the City (see Appendix B). Often low water pressure problems were solved with a meter replacement. In the past two years, the City's water system has received much attention due the poor quality and eventual breakdown of their groundwater source and the implementation of the new interim water system. The residents in the area are aware of the problems the old water source created and along with the City are anxious to fix them.

Community outreach and involvement will be coordinated with the City of Rio Dell. The project manager will present project status reports to the City Council at their monthly meetings. The meetings are open to the public. At those meetings the project manager can address any questions and concerns the public has about the ongoing project.

Appendix A
City of Rio Dell Broken Water Meters

Appendix B

Rio Dell Customer Water Complaints

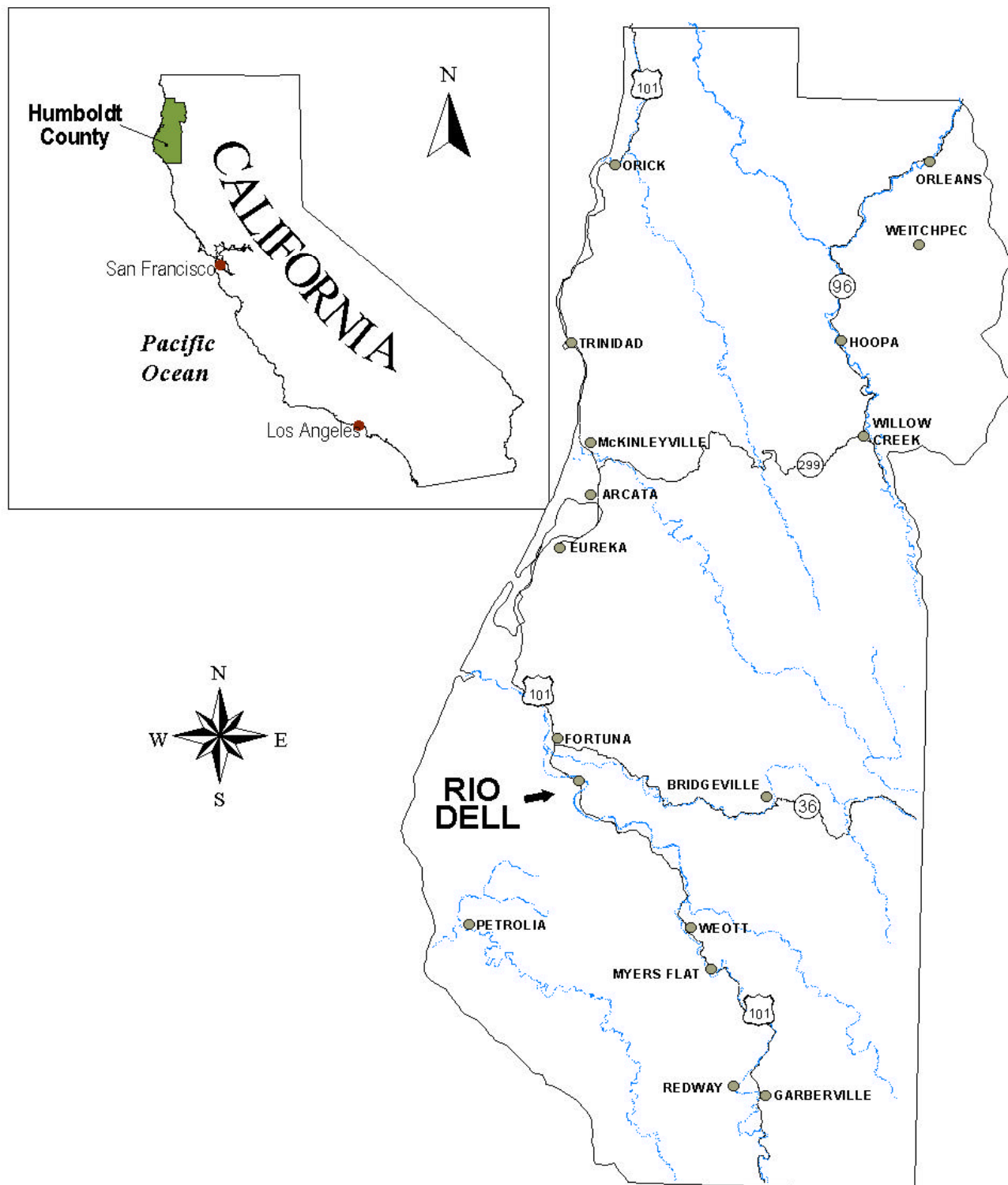


Figure 1
Vicinity Map
 City of Rio Dell
 Water Meter Replacement Project

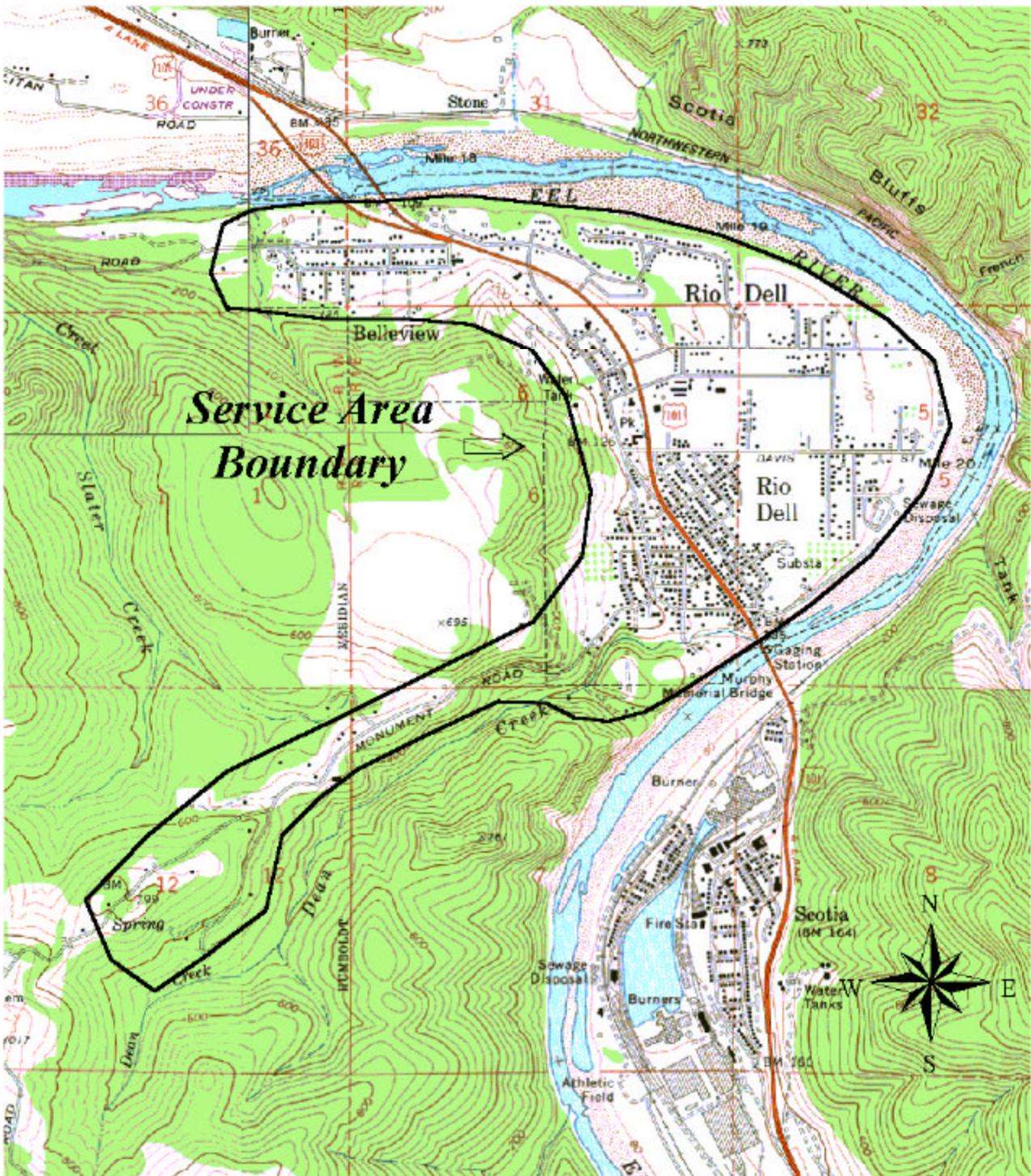


Figure 2
Plat Map of Service Area
 City of Rio Dell
 Water Meter Replacement Project

Table 1: Timetable: 2002 – 2004
City of Rio Dell Water Meter Replacement Project

Task Name	Estimated Time	2002					2003									
		A	S	O	N	D	J	F	M	A	M	J	J	A	S	O
DWR Contract Signed ⁽¹⁾																
Task 1: Field Inspection	12 weeks															
Task 2: Develop and Review Design Plans and Specifications	16 weeks															
Task 3: Bid Period Services	4 weeks															
Task 4: Construction Inspection and Management	16 weeks															
Task 5: Construction Project Closeout	4 weeks															
Task 6: Quarterly DWR Reporting	1x/quarter															
Task 7: Grant Administration	Full duration															

(1) Start date estimated from DWR's anticipated schedule, included in the proposal solicitation package

Table 7: Project Benefits								
City of Rio Dell Rio Dell Water Meter Replacement Project								
Estimation of Amount and Value of Uncharged Water in the Rio Dell System (Applicant Benefit)								
	Number of Connections ⁽¹⁾	Percent of Connections	Average Water Use ⁽²⁾ ft ³ /conn/mo.	Actual Charged use ⁽³⁾ ft ³ /conn/mo.	Uncharged Water Use ⁽⁴⁾ ft ³ /mo.	Unit Cost of Water \$/ H.C.F	Monthly Revenue lost to malfunctioning meters \$/ month	Annual Revenue lost to malfunctioning meters \$/year
Non-Functioning	134	11%	1530	600	124,620	\$1.72	\$2,143	\$25,722
Under Reporting	885	75%	1530	1224	270,810	\$1.72	\$4,658	\$55,895
Functioning	161	14%	1530	0	0	\$1.72	\$0	\$0
Total Meters	1180	100%		1,824	395,430	\$1.72	\$6,801	\$81,617
Present Value of the Benefits over the 20 Year Life of the Project (Interest Rate of 6%)								\$936,138
Estimation of Water Savings due to Conservation (Eel River and Regional and State Water Management Plan Benefits)								
	Number of Connections	Water Use Without Accurate Metering gal/conn/day	Estimated % Water Savings due to accurate metering	Water Use With Accurate Metering gal/conn/day	Water Savings per connection gal/conn/day	Annual Water Savings gal/year	Annual Water Savings acre-ft/year	
Non-Functioning	134	477	20%	381	95	4,663,030	14	
Under Reporting	885	424	10%	381	42	13,687,500	42	
Functioning	161	381	0%	381	0	0	0	
Total Meters	1180					18,350,530	56	
Estimation Parameters					<div><div>⁽¹⁾ Based on Field Inspections and Review with Public Works Department</div><div>⁽²⁾ Based on 150 gpcd</div><div>⁽³⁾ Nonfunctioning meters assessed base charge only and average under reporting meter 20% low.</div><div>⁽⁴⁾ The difference between average water use and charged water use for the month</div><div>⁽⁵⁾ Average demand after water conservation</div></div>			
Average Daily Demand from Water Feasibility Study ⁽⁵⁾			150	gpcd				
Est. Current Population			3000	people				
Est. Current Average Annual Demand			450,000	gpd				
Number of Connections			1180	connections				
Average per Connection Demand			381	gal/conn/day				
Average per Connection Demand			51	ft ³ /conn/day				
Average Monthly Demand (30 days)			1530	ft ³ /conn/mo.				
Monthly water use included in Rio Dell Base Water Charge			600	ft ³ /conn/mo.				
Average monthly water use above base charge per connection			930	ft ³ /conn/mo.				

⁽¹⁾ Based on Field Inspections and Review with Public Works Department

⁽²⁾ Based on 150 gpcd

⁽³⁾ Nonfunctioning meters assessed base charge only and average under reporting meter 20% low.

⁽⁴⁾ The difference between average water use and charged water use for the month

⁽⁵⁾ Average demand after water conservation

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Table 6: Scope of Engineering Services, Summary City of Rio Dell Water Meter Replacement Project <u>Project Manager:</u> Steve McHaney Prepared by: Rebecca Williams Reviewed by: Steve McHaney Reviewed Date: 2/22/2002				
SUMMARY COST ESTIMATING SHEET				
Task Name	<u>City Staff</u>	<u>Direct Labor</u>	<u>Reimbur-</u> <u>sables</u>	TOTAL COST
Task 1: Field Inspection	\$3,250	\$7,636	\$0	\$10,886
Task 2: Develop and Review Design Plans and Specifications	\$1,000	\$18,748	\$0	\$19,748
Task 3: Bid Period Services	\$560	\$2,946	\$500	\$4,006
Task 4: Construction Inspection and Management	\$3,400	\$69,636	\$0	\$73,036
Task 5: Construction Project Closeout	\$360	\$4,756	\$0	\$5,116
Task 6: Quarterly DWR Reporting	\$560	\$1,346	\$0	\$1,906
Task 7: Grant Administration	\$1,120	\$4,100	\$0	\$5,220
SUB-TOTAL	\$10,250	\$109,168	\$500	\$119,918
PROJECT CONTINGENCY	10%			\$11,992
TOTAL				\$131,910

Summary	
Planning Design and Engineering	\$41,766
Construction Inspection and Management	\$78,152
Sub-Total	\$119,918